CLAIMS

What is claimed is:

1. Synthetic analogues of PtdIns(4,5)P_2 incorporating one or more of the following modifying structural features, (i) the 2-OH is rendered non-nucleophilic by: (a) derivatization, exemplified by 2-OCOR or 2-OR, R = alkyl, substituted alkyl or alkenyl, particularly 2-*O*AC, or by replacement as in 2-deoxyhalo, and 2-dideoxyhalo, particularly 2-*O*-deoxyfluoro, (ii) photoaffinity, fluorescent, spin, other reporter groups, and conjugands for linking to polymer, chromatographic matrix, or gold surfaces are incorporated in the fatty acyl or inositol residues as exemplified in structure **2** wherein the absolute stereochemistry of the natural PtdIns(4,5)P_2 is maintained.
2. ~~Analogues~~ of Claim 1 wherein the glycerol esters are replaced by ether bonds.
3. Analogues of Claims 1 and 2 applied as analytical reference and research reagents.
4. A multi-step method for the synthesis of 2-modified PtdIns(4,5)P_2 analogues as described in FIG. 1 and 2.
5. 1D-3,6-Di-*O*-benzyl-4,5-*O*-cyclohexylidene-*myo*-inositol as a starting material for the synthesis of Claim 3.
6. Analogues of 1D-3,6-di-*O*-benzyl-4,5-*O*-cyclohexylidene-*myo*-inositol wherein the 4,5-*O*-protection is derived from acetone, benzaldehyde, camphor or equivalent in place of cyclohexanone.
7. Analogues of 1D-3,6-di-*O*-benzyl-4,5-*O*-cyclohexylidene-*myo*-inositol wherein the 3,6-*O*-protection is provided by allyl, 1-propenyl, *p*-methoxybenzyl, and equivalent groups removable by reagents other than catalytic hydrogenolysis.
8. Key phosphodiester intermediates in synthesis according to Claims 3 and 4 formed by the reaction of a selectively protected *myo*-inositol and an *sn*-3-phosphatidic acid or glycero-ether analogues.
9. A method for synthesis of PtdIns(4,5)P_2 analogues based on derivatization by acylation, phosphorylation and equivalent reactions with a selectively protected PtdIns(4,5)P_2 carrying a free hydroxyl in the inositol.
10. Phosphoinositide analogues modified as in Claims 1 and 2 but based on a PtdIns-mono or poly-phosphate other than PtdIns(4,5)P_2.